SOCIAL-ENVIRONMENTAL EDUCATION OF STUDENTS: DEMAND-MOTIVATING ASPECT

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The investigation of the students' social-environmental education phenomenon as a special activity requires studying the most important component of its structure – the demand-motivating one. In connection with this there appears the necessity to define the essence of motives of this kind of education within the framework of the activity approach and marking out certain classifications in the most general form.

It should be noted that the detection of proper psychological aspects of the considered motives is not included into the content of this problem. The challenge is to infer those motives, which reflect the activity of the personality and society in cooperation with natural habitat, on the basis of the accumulated theoretical experience on the problem of behavior and activity motivation. The composition and place of educational motives in the field of social-environmental relations is defined by the psychological structure of natural management as the process taking place between the society and nature. At the heart of the schematic construction of this kind of activity there is a model of general architecture of the psychological activity system developed by V.D. Shadrikov. The source is the human biosocial structure. Thus, the psychological system-structural model of natural management includes: demand – motive – objective – real practice – program – environmental assets' use result. This very model in our research projects the system of students' social-environmental education. By virtue of the fact that in the psychological science there are still many unsettled problems connected with driving forces of human activity and behavior, a common approach to the problem of motivation, its terminology, formulation of basic concepts the students' social-environmental education structural components' consideration in the context of the activity approach was carried out only at the level of general directions.

So, the necessity of social activity in the natural habitat (social-environmental activity) defines the corresponding demands of the society and personality, so-called social-environmental demands: natural, psychological, pedagogical, ethic, economic, social, labour ones. The satisfaction of these demands of the society in recent years resulted in the perception of the necessity to rehabilitate the environment providing life and activity of the human and humankind. We call these demands environment-restorative. The achievements of natural scientists (I.P. Gerasimov, V.S. Preobrazhensky, N.F. Reimers and others), and in the last years also the representatives of various sciences, who associate different sides of the human existence in one way or another (S.N. Glazachev, N.M. Mamedov, N.N. Moiseyev, L.V. Smolova, V.A. Yasvin and others), demonstrate the necessity of not only studying the environment, its resource potential and its use in the satisfaction of various demands, but also the necessity of protection, restoration and rehabilitation of this environment providing a further sustainable development of the society. In other words, the biosocial essence of the human appears today as the source of a new demand – the demand for preservation of the environmental conditions and assets for the present and future generations, for everything living on the planet.

The satisfaction of this demand, vital for the human and the society, requires a corresponding activity transforming the relations with nature. However, it is necessary to prepare all the sections of population, the student youth, future experts connected directly or indirectly with the natural habitat, in particular, for such transforming activity, that is why the motives of rational natural management should be formed in the graduate education as well. In connection with this it is necessary to distinguish the motives of rational social-and-ecological activity (natural management) proper and the motives of education in the context of this activity. Resting upon one of the last definitions of the motive (P.I. Pidkasisty, V.A. Mizherikov) by the **motives of rational social-and-ecological activity** we mean various motivations defining the activity of the subjects (society or personality) in the interaction with the environment, its orientation to the rational (within the limits of norm and measure) use of environmental assets with account of living circumstances. And by the **motives of education in the context of social-and-ecological activity** we mean such motivations, which define the directivity of personal activity on the acquirement of social-and-ecological knowledge, social-and-ecological skills and experience of creative and emotional-axiological attitude towards nature. In modern psychology the term "motive" is used to define different phenomena, states evoking activity of the subject. The role of the motive can be performed by demands and interests, inclinations and emotions, attitudes and ideals. In our case the forms of manifestation of the motive are the same, but, first of all, they are connected with social-environmental relationships and their reflection in specially created conditions of the educational institution. So, general motives reflecting the content of social-and-ecological activity of people are defined by various groups of human demands and manifest themselves in the last. In the social-and-ecological activity motives classification offered by us we proceeded from the classification of demands (N.F. Reimers, 1994) conditioned by internal qualitative and quantitative factors. These demands and possible motives are represented by the following four groups. The **general human demands**:

- biological (anatomico-physiological, physical or natural) ones define the following motives of social-and-ecological activity (felt-needs of SEA): the *need for* physical existence of a human - maintaining

normal thermal, radiological and magnetic-wave background; normal water and air composition; well-balanced food; healthy sleep and other kinds of relaxation; protection against various diseases and anthropogenic contaminations; biological information-spatial comfort, i.e. protection against under- and overpopulation; a comfortable natural habitat; motion; labour; mobile activities; certain life and labour space; etc.;

- ethological-behavioral (psychological) ones cause the *need for* belonging to an ethological group in the context of the developing property of an individual; a psycho-emotional contact; having an own ethological group; a certain ethological "climate" (for example, pace of living, etc.); an ethologically comfortable dwelling, "ethological landscape" (the combination of the natural habitat with the "second" and "third" nature); etc.

- ethnic demands define the *need for* ethnic independence; comprehension of one's own people's objective existence as an ecological-social-economic aggregate; belonging to an ethnically independent group; a sustainable existence of one's own ethnos; "home" nature scenery adequate to the ethnos history; the "second", "third" nature impressed in the "ethnic memory" since childhood (architecture, cultural landscapes, etc.);

- social (social-psychological) demands require the *need for* civil liberties warranted by law or customs; guarantees (constitutional or traditional-social ones) providing confidence in the future; moral standards of communication between people and with natural environment; freedom of knowledge and self-actualization; education of social groups of various hierarchy; free mix with equals; understanding one's own sex and age and following them in accordance with social norms; individual stereotypes and tolerance of the society to them; a uniform informative-cognitive environment; a certain social background for the rest groups' demands' satisfaction.

The marked out groups of motives are of the most general, approximate character. The satisfaction of the marked out demands, realization of the motives are possible under the condition of implementation of laws of the society and nature interaction and rational natural management. In other words, the present-day critical condition of the natural environment dictates the demand and necessity of these laws' observance. Let us show the correlation of the natural management principal laws (N.F. Reimers, 1994) and the motives marked out by us and defined by these laws.

- the law of environmental assets' limitation (exhaustibility) – the necessity of natural resources conservation;

- the law of productive forces' development correspondence to the natural resource potential of social progress – the necessity of keeping balance between the productive forces and natural resource potential in the course of development;

- the law of research intensity increase of social evolution – the necessity to increase the research costs in the area of social-ecological relationships;

- the law of natural resource potential loss – the necessity to increase the labour and energy costs for the use of natural resources within one formation, mode of production and technology;

- the rule of natural systems' reforming measure – the necessity to observe the measure in cooperation with the natural habitat;

- the rule of (inevitable) chain reactions of "rigid" control over the nature – the necessity of accounting the inevitable chain reactions happening because of technical management of the nature and being able to cause man-made disasters;

- the rule of naturality or the rule of an old automobile – the necessity of accounting the loss of technical devices' efficiency (in the course of time) and, in connection with this, the social cost increase for their support;

- the rule of "sloppy control" over the nature – the necessity of nature management taking its laws into account;

- the law of a joint action of natural factors – the necessity of accounting all the aggregate of the factors in the course of using any natural resource;

- the law of maximum – the necessity of prevention of any ecosystem's overwork resulting finally in self-destruction of the system;

- the rule (law) of territorial ecological balance – the necessity of accounting the territorial- ecological balance;

- the rule (law) of component ecological balance - the necessity of observance and accounting the component-ecological balance;

- the law of decreasing (natural) fertility – the necessity of accounting the tendency of natural fertility reduction as a result of human intervention;

- the law of the end product's environmental capacity reduction - the necessity of accounting the tendency of natural substance reduction in the social product average unit;

- the law of the involved natural resources' turnover rate increase – the necessity of accounting the involved natural resources' turn-round growth trend against the rate of growth of production itself, etc.

Natural management with due consideration of its laws and social motivation requires to observe one more the most important condition, which is equal to a law – the law of natural environment protection, its restoration and rehabilitation. This law, the main one at the present time, comprising social-ecological relationships defines more private laws – the principles forming a normative attitude of the human and society to the nature. N.F. Reimers gives the following of them: the law of pebble-leather; the law of irremovability of wastes and/or side effects of production (husbandry); the law of waste amount constancy for

technological purposes; the rule "environmentally friendly is economic" (the conservation of natural resources is finally profitable both in social and economic relationships); the laws of component-ecological balance, territorial-ecological balance, internal dynamic equilibrium; "iron laws" of nature conservancy of P. Ehrlich; the principle of uniqueness; the principle of reasonable sufficiency and tolerability of risk; the principle of information insufficiency; the principle of instinctive denial-acknowledgement; the principle of illusive prosperity or euphoria over first successes; the principle of remoteness of events; the rule of economic-ecological perception of J. Staikos; the law (aphorisms) of B. Commoner (everything is connected with everything; everything should get somewhere; the nature "knows" better; nothing is given for free).

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GOALS, TYPES, PROBLEMS AND PROFESSIONAL-SPECIALIZED GRADES FOR SPECIALITY "MACHINES AND APPARATUSES OF CHEMICAL INDUSTRIES" FOR 3RD GENERATION EDUCATIONAL STANDARD

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1. Goals of higher professional education for direction of "Energy- and resource saving processes in chemical technology, oil chemistry and biotechnology" of specialty "Machines and apparatus of chemical industries" in education and personality training.

1.1. In the field of education goals of higher professional education for direction of "Energy- and resource saving processes in chemical technology, oil chemistry and biotechnology" of specialty "Machines and apparatus of chemical industries" are:

- training in the foundations of human, social, economic, mathematical, scientific, general engineering and professional knowledge, enabling the graduate to work successfully in the chosen field, have a universal and specialized professional competence, contribute to their social mobility and stability in the labor market, successful career, that, in general, should provide economic and technological security of the Russian Federation in the field of advanced technologies.

1.2. In the field of personality training goals of higher professional education for direction of "Energy- and resource saving processes in chemical technology, oil chemistry and biotechnology" of specialty "Machines and apparatus of chemical industries" are:

- formation of social and personal qualities of graduates: dedication, organization, hard work, responsibility, citizenship, patriotism, communication, tolerance, strengthening morality, creativity, obschekulturnye needs, cultural, linguistic and adaptive research, scientific and professional ethics, perseverance in achieving objectives ability of arguments to defend their professional interests and the interests of its professional staff, endurance and physical training.

Graduates professional activity area

Graduates of direction of "Energy- and resource saving processes in chemical technology, oil chemistry and biotechnology" of specialty "Machines and apparatus of chemical industries" professional activity area includes: scientific and project developing institutions, production, technological and machine building plants, project design bureau, production labs, institutions of equipment certification, government environment and ecological control and monitoring organs, education facilities of different forms of ownership. Graduate of specialty "Machines and apparatus of chemical industries" can work on any post allowed by Russian Federation law and departmental documents for people with higher professional education concerning training area and work experience.

Professional activity objects

Professional activity objects of graduates of direction of "Energy- and resource saving processes in chemical technology, oil chemistry and biotechnology" of specialty "Machines and apparatus of chemical industries" are:

- technological plants, production and production equipment of main chemistry (production of mineral acids, alkaline, salts, fertilizers, carbon, soot, chemicals, etc.);
- technological plants, production and production equipment of processing of carbon materials (oil refineries, gas plants, coal and coal shale processing plants);
- technological plants, production and equipment of heavy and precise organic synthesis (production and processing of plastic masses, artificial and synthetic fibers, elastics, rubbers and rubber products, artificial resins and glues, etc.);
- technological plants, production and equipment of heavy and precise organic synthesis (production of silicon materials, semi-products and dyes, artificial liquid fuel, pesticides, herbicides, pharmaceuticals, surfactants and detergents, etc.);
- processing, manufacturing and manufacturing equipment of energy materials (manufacture of gunpowder and explosives, solid and liquid rocket fuels, etc.);
- processing, manufacturing and manufacturing equipment and recycling of nuclear fuel;